

SECTION 016120
SYSTEM DESCRIPTIONS

PART 1 – GENERAL

101. CONTENT

101.1 CONTRACTOR shall prepare and submit for the DISTRICT's review, system descriptions of all major systems supplied by him in accordance with the following format. System descriptions shall be submitted per Section I – Contract Drawing and Data Requirements.

101.2 System Title and Designation

This Section shall include System Title and Designation as identified in the specification.

101.3 References

This Section shall include a list of all drawings and documentation that are to be used in conjunction with the System Description to fully understand the design and operation of the system/components.

101.4 System / Component Description

This Section shall provide the following:

- a. Purpose of the system
- b. Overview of the system with a description of flow path(s)
- c. Description of all major components including tag number(s), size, type, manufacturer, model number and redundancy requirements

101.5 Method of Operation

This Section shall provide the following:

- a. Description of Normal Plant Start-Up, including verification requirements of equipment positions (i.e., valve shall be opened or closed) and normal sequence for start-up.
- b. Description of Normal Operation, including the optimum equipment to be operating, operator monitoring requirements and normal operating parameters
- c. Description of Normal Plant Shutdown, including normal sequence of equipment for shutdown
- d. Description of Abnormal Operation, including all potential abnormal scenarios and required operator responses
- e. Description of Operation on Loss of Normal Power, including all required operator responses

101.6 Instrumentation and Controls

This Section shall include the following:

- a. Description of Major Equipment Controls including operator initiated actions and automatic trips

016120-1



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2

FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: Client Comments, Rev. 3
September 8, 2011
Project No. 12681-006

- b. Description of Alarms and Monitoring Instrumentation
- c. Description of Automatic Protection features that will protect system equipment and minimize disruptions to plant operation in case of a malfunction

101.7 Electrical Services

This Section shall include a description of the Electrical Requirements for all major equipment including tolerance of electrical supply frequency variation

101.8 Design Criteria

This Section shall identify the basis for the system/equipment design. It shall include the applicable items as follows or any additional criteria used to design the system or components.

- a. Mechanical:
 - a1. Piping system design criteria including design pressure, temperature, flow, etc.
 - a2. Equipment design parameters (i.e., design flow and head for pumps, valve sizing data, etc.)
 - a3. Maximum velocity criteria
 - a4. Pressure drop criteria
 - a5. Materials of construction (pipe, valves, equipment)
 - a6. Minimum pipe wall thickness requirements
 - a7. Erosion/corrosion allowances
 - a8. Insulation design criteria
 - a9. Physical design basis, including routing/pipe sloping requirements, flexibility design requirements, drainage requirements other pertinent design requirements
 - a10. Models/studies that were performed to support system/equipment design
 - a11. Spill containment sizing
- b. Structural/Civil:
 - b1. General site information used for design such as wind speed, snowfall, frost depth, seismic category, etc., as applicable
 - b2. Drainage systems sizing basis
 - b3. Excavation/backfill criteria
 - b4. Foundation criteria
 - b5. Loading Combinations
 - b6. Structural Steel materials, deflection, etc

016120-2



Nebraska Public Power District

Always there when you need us

GERALD GENTLEMAN STATION UNITS 1&2

FLUE GAS DESULFURIZATION SYSTEMS



Specification G-5301
Issue: Client Comments, Rev. 3
September 8, 2011
Project No. 12681-006

- b7. Pre-engineered metal building criteria
- c. Electrical
- d. Instrumentation and Controls
- e. Normal Range of System Variables

101.9 Commissioning and Testing

This Section shall identify the commissioning and testing requirements for the system/equipment. This Section shall describe shop tests that were performed by the CONTRACTOR and describe tests to be performed by the DISTRICT following installation.

101.10 Standards

This Section shall include a list of all Industry Codes and Standards that apply to the design, construction and installation of the systems/equipment.

- 101.11 The above requirements are minimum requirements. Additional information, which is necessary for a complete understanding of the system/equipment, including proper operation and care of the equipment, shall be included in the System Description.

END OF SECTION 016120

016120-3